

**City of Troy (Surface Water) PWS # 2290041
SOURCE WATER ASSESSMENT FINAL REPORT**

May 3, 2001



**State of Idaho
Department of Environmental Quality**

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Executive Summary

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. This assessment is based on a land use inventory of the designated assessment area and sensitivity factors associated with the watershed characteristics.

This report, *Source Water Assessment for City of Troy, Idaho*, describes the public drinking water system, the zone boundary of water contribution, and the associated potential contaminant sources located within these boundary. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. **The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

Two groundwater wells and one surface water intake supply the City of Troy's drinking water system. This report will focus on the source water assessment for the single surface water intake. A separate report will assess source water for the two groundwater wells.

The most recent testing of the City of Troy's surface water intake indicates that the source has turbidity averaging in the 2.00 to 3.00 mg/L range. However, the system's slow sand filtration process lowers the turbidity to as low as 0.30 mg/L. Although sample data in the State's drinking water database (DWIMS) for the City of Troy is limited, there are no detections of inorganic compounds (IOC's) including nitrates, synthetic organic compounds (SOC's) or volatile organic chemicals (VOCs) except disinfection byproducts chloroform (63.3 mg/L) and Brodichloromethane (1.1 mg/L). This system has a low risk rating for contamination.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

Partnerships with state and local agencies and any future development in the source water area should be established and are critical to success. Due to the fairly short time associated with the movement of surface waters, source water protection activities should be aimed at short-term management strategies with the development of long-term management strategies to counter any future contamination threats. Source water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission and the Soil and Water Conservation District, and the Natural Resources Conservation Service, the U.S. Forest Service and the Idaho Dept. of Lands.

A community with a fully developed source water protection program will incorporate many strategies. For assistance in developing protection strategies please contact your regional DEQ office or the Idaho Rural Water Association.

SOURCE WATER ASSESSMENT FOR CITY OF TROY, IDAHO

Section 1. Introduction - Basis for Assessment

The following sections contain information necessary to understand how and why this assessment was conducted. **It is important to review this information to understand what the ranking of this source means.** A map showing the delineated source water assessment area, map showing the entire watershed contributing to the delineated area, map showing the twenty-four (24) hour emergency response delineation, and the inventory of significant potential sources of contamination identified within the delineated area are attached. The list of significant potential contaminant source categories and their rankings used to develop the assessment also is attached.

Background

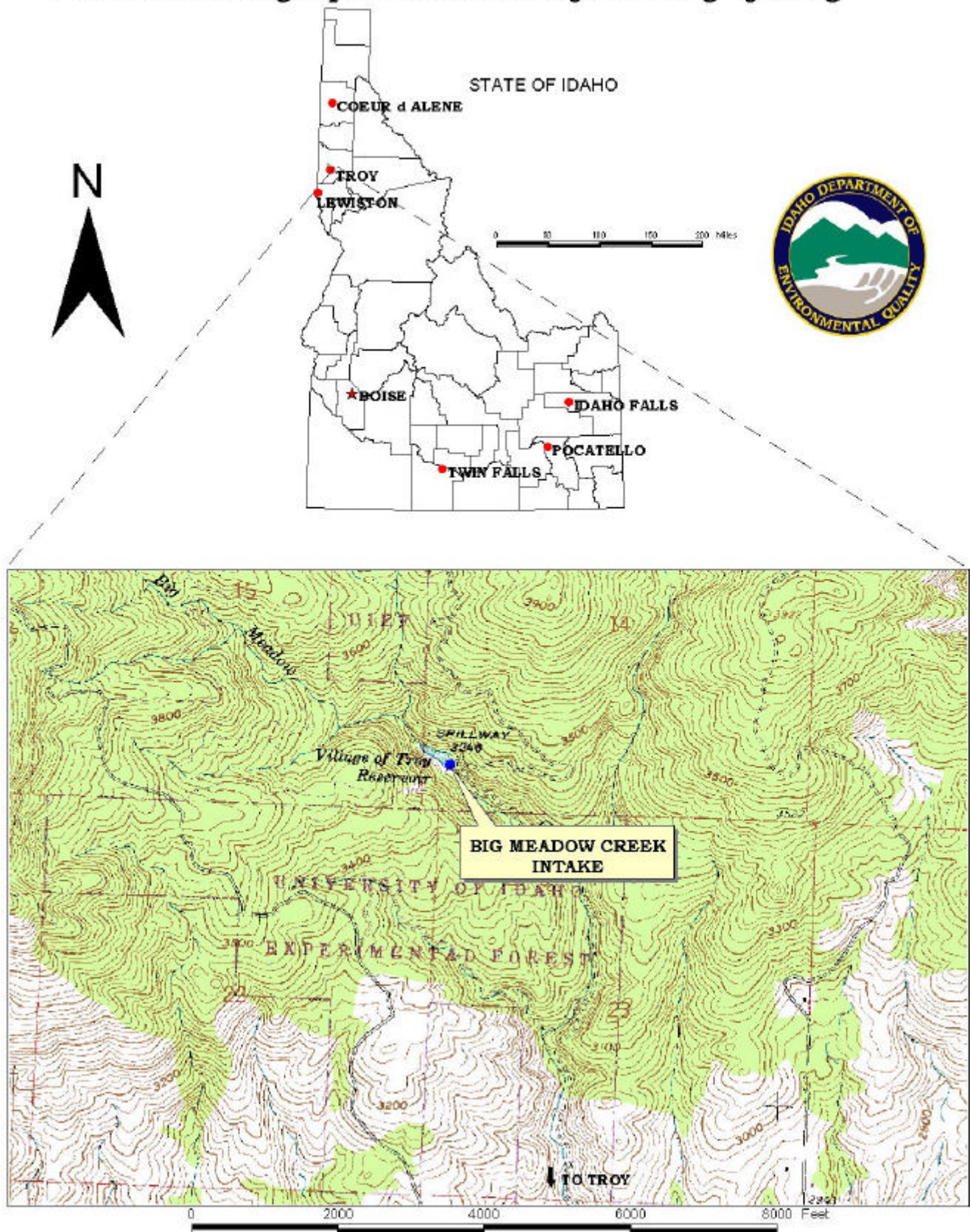
Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative susceptibility to contaminants regulated by the Safe Drinking Water Act. This assessment is based on a land use inventory of the delineated assessment area and sensitivity factors associated with the intakes and watershed characteristics.

Level of Accuracy and Purpose of the Assessment

Since there are over 2,900 public water sources in Idaho, there is limited time and resources to accomplish the assessments. All assessments must be completed by May of 2003. An in-depth, site-specific investigation of each significant potential source of contamination is not possible. **Therefore, this assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

The ultimate goal of the assessment is to provide data to local communities to develop a protection strategy for their drinking water supply system. The Idaho Department of Environmental Quality (DEQ) recognizes that pollution prevention activities generally require less time and money to implement than treatment of a public water supply system once it has been contaminated. DEQ encourages communities to balance resource protection with economic growth and development. The decision as to the amount and types of information necessary to develop a source water protection program should be determined by the local community based on its own needs and limitations. Source water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

FIGURE 1. Geographic Location of the City of Troy



Section 2. Conducting the Assessment

General Description of the Source Water Quality

Troy, Idaho is a community of approximately 860 people, located 50 miles north-northeast of Lewiston, Idaho. The public drinking water system for the City of Troy is comprised of two groundwater wells and one surface water intake. The surface water intake is located five miles northwest of Troy on Big Meadow Creek (Figure 1). This report will focus on the single surface water intake.

The primary water quality issue currently facing City of Troy is that of potential surface water bacterial contamination in the immediate area of the intake and reservoir. In recent years water sample analysis indicates that the source has turbidity averaging in the 2.00 to 3.00 mg/L range. However, the system's slow sand filtration process lowers the turbidity to as low as 0.30 mg/L. Although sample data in the State's drinking water database for the City of Troy is limited, there are no detections of IOC's including nitrates, SOC or VOC except for the chlorination disinfection byproducts Chloroform (63.3 mg/L) and Brodichloromethane (1.1 mg/L). This intake system has a low risk rating for contamination.

Defining the Zones of Contribution--Delineation

To protect surface water systems from such potential contaminant pathways, the EPA required that the entire drainage basin be delineated upstream from the intake to the hydrologic boundary of the drainage basin (U.S. EPA, 1997b). The delineation process established the physical area around an intake that became the focal point of the assessment. The Big Canyon Creek drainage basin consists of approximately 873 acres.

The delineated source water assessment area for City of Troy can best be described as undeveloped forested recreational with limited logging. The actual data used by DEQ in determining the source water assessment delineation area are available upon request.

Identifying Potential Sources of Contamination

A potential source of contamination is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act and has a sufficient likelihood of releasing such contaminants at levels that could pose a concern relative to drinking water sources. The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of surface water contamination. The locations of potential sources of contamination within the delineation areas were obtained by field surveys conducted by DEQ and from available databases.

The dominant land use outside City of Troy is undeveloped forested recreational and dryland agriculture. Land use within Troy City limits consists of residential homes, small businesses, and light manufacturing. Homes within Troy are served by a central sewer system. Troy has no wastewater treatment lagoons. Storm water runoff is the primary potential contaminant source within the Big Canyon Creek watershed.

It is important to understand that a release may never occur from a potential source of contamination provided they are using best management practices. Many potential sources of contamination are regulated at the federal level, state level, or both to reduce the risk of release. Therefore, when a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the potential for contamination exists due to the nature of the business, industry, or operation. There are a number of methods that water systems can use to work cooperatively with potential sources of contamination. These involve educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water supply intake.

Contaminant Source Inventory Process

A contaminant inventory of the study area was conducted during August 2000. This involved identifying and documenting potential contaminant sources within the Troy Source Water Assessment Area through the use of computer databases and Geographic Information System (GIS) maps developed by DEQ. A map showing the delineated area with the potential contaminant sources is included (Figure 2).

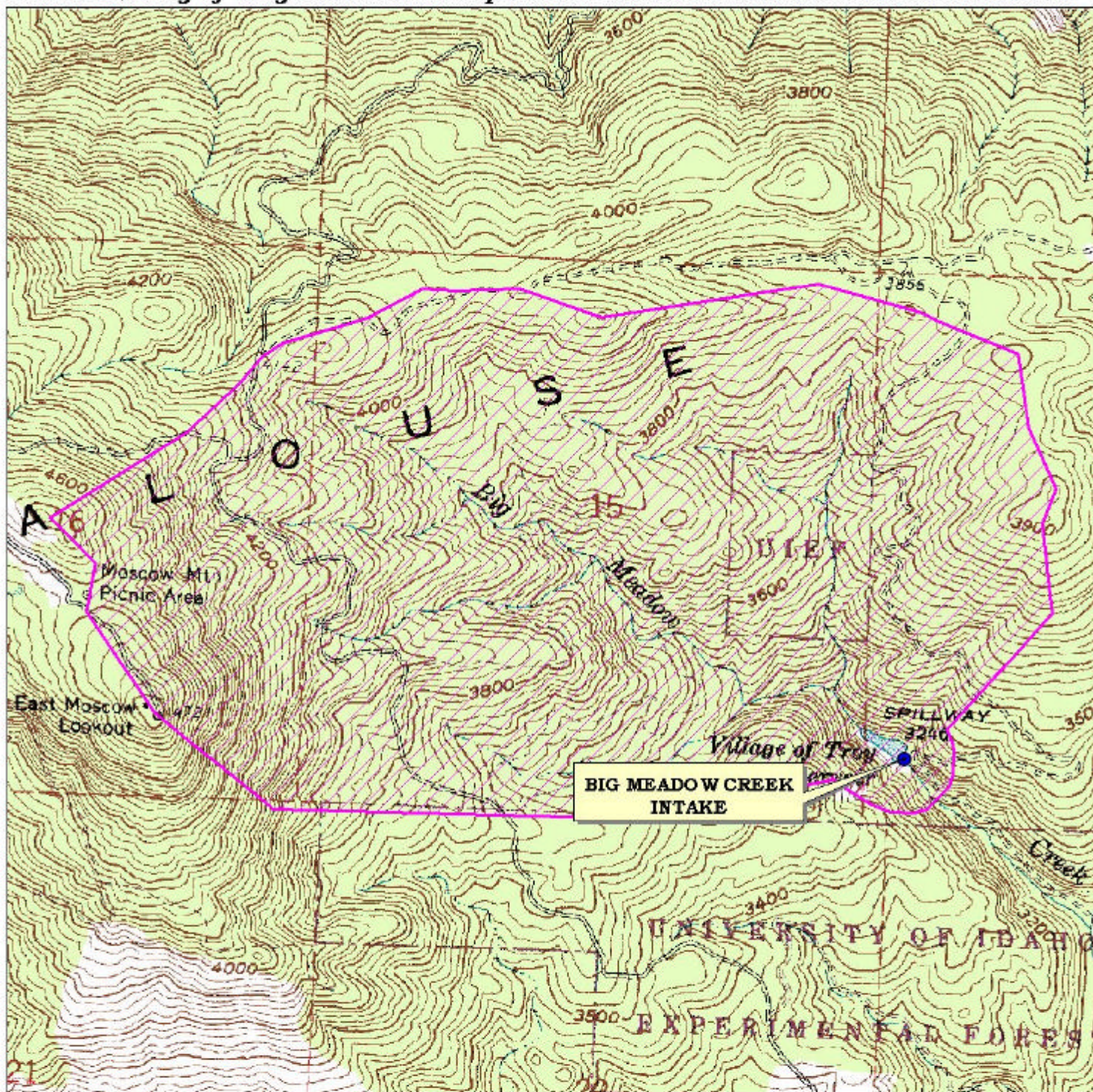
A total of two potential contaminant sites are located within the delineated source water area (see Table 1). Both potential contaminant sources are mining prospects (Figure 2). However, both prospects are considered to be a minimal threat to water quality. Table 1 lists the potential contaminants of concern and information source.

Table 1. City of Troy, Potential Contaminant Inventory

SITE #	Source Description ¹	Source of Information	Potential Contaminants ¹
1	Mine Prospect	Database Search	IOC
2	Mine Prospect	Database Search	IOC

¹IOC = inorganic chemical

FIGURE 2. City of Troy Delineation Map and Potential Contaminant Source Locations



LEGEND

Time of Travel Zone

	Watershed		Dairy		Toxic Release Inventory
	Wellhead / Intake		LUST Site		SARA Title III Site (EPCRA)
	Enhanced Inventory		Closed UST Site		Recharge Point
	CERCLIS Site		Open UST Site		Injection Well
	RICRIS Site		Business Mailing List		Group I Site
	AST		NFDES Site		Cyanide Site
			Mine		Landfill
					Wastewater Land App. Site



PWS# 2290041
BIG MEADOW CREEK INTAKE

Section 3. Susceptibility Analyses

Significant potential sources of contamination were ranked as high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity and construction of the intake, land use characteristic, and potentially significant contaminant sources. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each intake is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. The following summaries describe the rationale for the susceptibility ranking.

Intake Construction

The construction of the City of Troy public water system intake directly affects the ability of the intake to protect the source from contaminants. The City of Troy drinking water system consists of one intake located behind a dam at the headwaters of Big Canyon Creek. Water leaving the 200,000 gallon reservoir is filtered through a slow sand filtration system, disinfected, and gravity fed to the City of Troy's distribution system including 359 connections.

Potential Contaminant Source and Land Use

The Troy drinking water intake is located in an area with minimal upstream development and with no major roads. There are no obvious threats to water quality other than from limited logging and occasional pesticide spraying for weed control in these logged areas.

Table 2. Summary of City of Troy Water System Susceptibility Evaluation¹

Intake	Contaminant Inventory				System Construction	Final Susceptibility Ranking			
	IOC	VOC	SOC	Microbials		IOC	VOC	SOC	Microbials
1	L	L	L	L	L	L	L	L	L

¹H = High Susceptibility, M = Moderate Susceptibility, L = Low Susceptibility

IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Susceptibility Summary

In terms of the total susceptibility score, it can be seen from Table 2 that the City of Troy Big Canyon Creek facility has a low risk rating for susceptibility to microbial, inorganic, volatile and synthetic organic contamination, that could impact Big Canyon Creek.

Section 4. Options for Source Water Protection

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses that require education and surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

An effective source water protection program is tailored to the particular local source water protection area. A community with a fully developed source water protection program will incorporate many strategies. For the City of Troy, source water protection activities should focus on implementation of practices aimed at reducing the impacts within the delineated source water areas. Some of the delineated areas are outside the direct jurisdiction of City of Troy. Partnerships with state and local agricultural agencies and industry groups should be established and are critical to success. Due to the relatively short time involved with the movement of surface water, source water protection activities should be aimed at short-term management strategies with an emphasis on dealing with long-term future impacts from these same sources. Source water protection activities for agriculture should be coordinated with the Idaho Department of Agriculture, the Soil Conservation Commission and Soil and Water Conservation District, and the Natural Resources Conservation Service.

While the surface water sources possesses adequate quality and yield, limitations and vulnerability related to the construction of the intakes should be reviewed. The city has a program for the investigation of the feasibility of a shift to potential ground water sources to augment or replace the current surface water system.

Assistance

Public water supplies and others may call the following DEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the DEQ office for preliminary review and comments.

Lewiston Regional DEQ Office (208) 799-4370

State DEQ Office (208) 373-0502

Website: <http://www2.state.id.us/deq>

POTENTIAL CONTAMINANT INVENTORY

LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with above-ground storage tanks

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as Superfund is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of storm water runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.

References Cited

EPA (U.S. Environmental Protection Agency), 1997, State Methods for Delineating Source Water Protection Areas for Surface Water Supplied Sources of Drinking Water, EPA 816-R-97-008, 40p.

U.S. Government Printing Office, 1995, Code of Federal Regulations, 40 CFR 112, Appendix C-III, Calculation of the Planning Distance

Idaho DEQ, Nov., 2000, State of Idaho, Information Management System (DWIMS).

Attachment A

City of Troy Susceptibility Analysis Worksheet

The final scores for the susceptibility analysis were determined from the addition of the Potential Contaminant Source/Land Use Score and Source Construction Score.

Final Susceptibility Scoring:

0 - 7 Low Susceptibility

8 - 15 Moderate Susceptibility

> 16 High Susceptibility

Surface Water Susceptibility Report Public Water System CITY OF TROY Surface Water Source: BIG MEADOW CREEK
Public Water System Number 2290041
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1. System Construction		SCORE			
Intake structure properly constructed	NO	1			
Infiltration gallery or well under the direct influence of Surface Water	NO	0			
Total System Construction Score		1			
2. Potential Contaminant Source / Land Use		IOC Score	VOC Score	SOC Score	Microbial Score
Predominant land use type (land use or cover)	BASALT FLOW, UNDEVELOPED, OTHER	0	0	0	0
Farm chemical use high	NO	0	0	1	
Significant contaminant sources *	NO				
Sources of class II or III contaminants or microbials		0	0	0	0
Agricultural lands within 500 feet	NO	0	0	0	0
Three or more contaminant sources	NO	0	0	0	0
Sources of turbidity in the watershed	YES	1	1	1	1
Total Potential Contaminant Source / Land Use Score		1	1	2	1
3. Final Susceptibility Source Score		2	2	3	2
4. Final Source Ranking		Low	Low	Low	Low

* This source water has no special susceptibility concerns